

## Osteoporosis

You have clinic this week and a 58 y/o woman comes in with questions about osteoporosis saying her 62 y/o friend fell and sustained a hip fracture.

Multiple Choice:

1) Which is not a risk factor for osteoporosis?

- |                 |                                |                                |
|-----------------|--------------------------------|--------------------------------|
| a. Advanced Age | b. Previous fragility fracture | c. family history of fractures |
| d. Alcoholism   | e. Chronic steroid use         | f. low body weight (<58kg)     |
| g. Smoking      | h. Being in residency          |                                |

2) What is the recommended age for screening (low-risk) women for osteoporosis?

- a. 55   b. 60   c. 65   d. 70   e. screen only women with risk factors.

3) What is the recommended age for screening men for osteoporosis?

- a. 55   b. 60   c. 65   d. 70   e. no routine screening necessary.

4) How often should routine screening be performed?

- a. once is enough   b. every 1-2yrs   c. every 3-5 yrs   d. 10 yrs

5) DEXA scan shows a hip T-score of -2.8. What does that mean?

- a. She has osteoporosis  
b. She has osteopenia  
c. She's within the normal range for bone density

Definition:

Osteoporosis is a skeletal disorder characterized by low bone mass with microarchitectural disruption and fragility, resulting in an increased risk of fracture.

Symptoms:

Osteoporosis has no clinical manifestations until there is a fracture. This is an important fact, since many patients with achy hips or feet assume that their complaints are due to osteoporosis.

Screening:

All women age 65 or greater should be screened.

Consider screening post-menopausal women under 65 with one or more risk factors.

Routine screening in men is not recommended unless significant risk factors.

Women with normal measurements should be screened every 3-5 years. Women with significant risk factors can be screened 1-2 years.

Diagnosis:

Dual energy x-ray absorptiometry (DXA) is the most widely used method for measuring BMD because it gives very precise measurements at clinically relevant skeletal sites.

T-score = Pt's BMD – mean young adult BMD/SD

Z-score = Pt's BMD – age, gender, and ethnicity matched BMD/SD

T-score of -1.0 to -2.5 is osteopenia

T-score below -2.5 is osteoporosis

Evaluation:

Most postmenopausal women with osteoporosis have either age or estrogen deficiency-related bone loss due primarily to excessive bone resorption.

The goal of the evaluation is to exclude secondary causes of low bone mass, such as osteomalacia, hyperthyroidism and hyperparathyroidism.

Initial evaluation — The evaluation typically begins with a history, physical examination, and basic biochemical testing. Lifestyle factors which contribute to bone loss, including smoking, excessive alcohol, physical inactivity, and poor nutrition should be addressed.

Laboratory evaluation may help to diagnose secondary causes of osteoporosis such as renal or liver disease, hyperthyroidism, hyperparathyroidism, Cushing's syndrome, celiac disease and other forms of malabsorption, idiopathic hypercalciuria, or rarely, connective tissue disorders. Useful to check:

Basic panel, calcium, phosphorus, liver enzymes including AlkPhos, Vit D level, albumin, total protein, CBC, TSH, ~~urinal CA~~

Treatment:

1. Calcium ~1200mg/day
2. Vitamin D 800 IU/day
3. Women with osteoporosis (or seeking to prevent it) should exercise for at least 30 minutes three times per week, as exercise has been associated with improvements in or maintenance of bone density and a reduced risk of hip fracture in older women.

Cessation of smoking since smoking cigarettes has been shown to accelerate bone loss.

Bisphosphonates are the first-line medication for osteoporosis.

Alendronate (Fosamax) 70 mg PO qweek

Risedronate (Actonel) (5 mg/day, 35 mg once weekly, 150 mg once monthly), and ibandronate (Boniva) (150 mg qmonth PO or 3 mg intravenously every three months)

Zoledronic acid 5 mg administered intravenously (IV) once yearly,

Selective estrogen receptor modulators — Raloxifene is a tissue selective estrogen receptor modulator (SERM) that is used for the prevention and treatment of osteoporosis. It increases bone mineral density and reduces the risk of vertebral fractures. Raloxifene also appears to lower the risk of breast cancer, does not stimulate endometrial hyperplasia or vaginal bleeding, and increases the risk of venous thromboembolism. UTDOL favors bisphosphonates over raloxifene because they increase bone mineral density (BMD) more than raloxifene and randomized trials have documented hip fracture efficacy.

Estrogen/progestin therapy — Estrogen-progestin therapy is no longer a first-line approach for the treatment of osteoporosis in postmenopausal women because of increased risk of breast cancer, stroke, venous thromboembolism, and perhaps CAD.

Parathyroid hormone — Parathyroid hormone (PTH) seems an unlikely candidate for the treatment of osteoporosis because of its well-described deleterious effect on bone. However, intermittent administration of recombinant human PTH stimulates bone formation more than resorption, and is effective for fracture reduction in women with osteoporosis. Given its cost, subcutaneous route of administration, long-term safety concerns (theoretically can cause osteosarcoma), and availability of other agents, PTH is generally not used as a first-line drug for treatment or prevention of osteoporosis.

Calcitonin — A less popular choice for treatment of osteoporosis is nasal calcitonin, 200 IU/day. We prefer other drugs to calcitonin because of its relatively modest effect on BMD and weak antifracture efficacy compared with bisphosphonates and parathyroid hormone

Mortality from hip fracture approaches 25 percent at one year. Of those who survive to six months, only 60 percent recover their prefracture walking ability, and only 50 percent recover their prefracture ability to perform activities of daily living. Prevention is key. In addition, the majority of patients with fragility fractures are not evaluated for osteoporosis. One study of women after hip fracture showed 13% were treated properly for osteoporosis, 47% inadequately treated, and 40% no treatment at all.

Hip fractures should be operated within 48 hrs — studies have shown timely surgery reduces mortality. Patients should get DVT prophylaxis — lovenox 30mg q12 hrs or 40mg q24.